THE WEATHER OF THE MONTH.

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CHARACTERISTICS OF THE WEATHER FOR NOVEMBER.

The distinguishing feature of the month was, perhaps, its dryness. Less than 50 per cent of the normal precipitation was recorded in almost half the districts, and in but three of the twenty-one districts into which the country has been divided was there more than 100 per cent.

Monthly mean pressure was abnormally high in the interior of the country and unusually low over the Canadian Maritime Provinces and over the north Pacific coast. An interesting feature of the month was the course of an area of low pressure which appeared on the north Pacific coast on the morning of the 9th and reached the New England coast by the evening of the 12th. During the 13th it moved slowly northeastward, reaching eastern Maine by 8 p. m. of that date. It then doubled back on its course and was central the next morning (a. m. of the 14th) in the neighborhood of Quebec, with a pressure reading of 29.04 inches. It remained in that location about thirty-six hours, gradually filling up, and finally disappeared over the mouth of the St. Lawrence on the 17th.

The temperature was below the seasonal average over the eastern third of the country and above in the Rocky Mountain region and thence westward to the Pacific coast.

PRESSURE.

The distribution of monthly mean pressure is graphically shown on Chart IV and the numerical values are given in Tables I and VI.

As will be seen by Chart IV a ridge of high pressure extended from the South Atlantic States northwestward to the lower Missouri Valley and the middle Rocky Mountain region. This ridge of high pressure was due to the fact that the movement of areas of high pressure during the month was southeasterly from the northeastern Rocky Mountain slope by way of the Missouri and middle Mississippi valleys, rather than by way of the southern circuit, viz, southeasterly along the eastern Rocky Mountain slope to the Gulf, and thence northeasterly to the South Atlantic States. The rate of movement over the shorter path is, so far as has been observed by the writer, somewhat greater than over the longer path. Highs that move over the shorter path follow, as a rule, rapidly moving lows that skirt the northern boundary. These lows are generally dry, except while passing over the Great Lakes. Highs that take the longer circuit generally follow southwest lows, which, it may be remembered, give abundant precipitation. The ridge of high pressure above mentioned, which we find on the monthly mean chart, simply expresses the fact that the majority of the highs followed the shorter circuit, and in so doing produced a configuration of the isobars unfavorable to the precipitation of moisture.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

Temperature was below the seasonal average generally east of the Mississippi River, the greatest negative departure, —6°, being along the South Atlantic and Florida coasts. West of the Mississippi River mean temperature was above the seasonal average by amounts ranging from a fraction of a degree to 7° and 8° in the middle and northern Rocky Mountain regions. Maximum temperatures of 90° and over were registered in the lower Rio Grande Valley, and of 80° and above generally throughout the Gulf States, Texas, southern Arizona, and southern California. In the upper Lake region the maximum temperature during the month did not reach 50°. The minimum temperature of the month did not reach freezing in Florida, except in the northern portion, nor along the immediate Gulf coast, in southern Arizona, southern California, nor along the immediate Pacific coast line. Minimum temperatures below zero were recorded in North Dakota and northern New England.

The average temperature for the several geographic districts and the departures from the normal values are shown in the following table:

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	35.7	— 4.5	— 2.3	— 0.2
Middle Atlantic	12	40.5	— 4.2	— 2.4	— 0.2
South Atlantic	10	49.9	— 4.9	—14.2	— 1.3
Florida Peninsula	7	61.7	— 4.6	—17.3	— 1.6
East Gulf	7	54.9	— 2.4	—10.5	— 1.0
West Gulf	7	58.9	+ 2.4	+11.4	+ 1.0
Ohio Valley and Tennessee	12	42.2	— 2.9	— 4.7	— 0.4
Lower Lake	8	36.6	— 2.5	+ 1.1	+ 0.1
Upper Lake	9	33.6	+ 0.2	+14.0	+ 1.3
North Dakota	8	26.7	— 2.1	+25.8	+ 2.3
Upper Mississippi Valley	11	37.7	+ 0.3	+20.0	+ 1.8
Missouri Valley	10	40.3	+ 3.0	+34.0	+ 3.1
Northern Slope	7	38.5	+ 5.8	+27.0	+ 2.5
Middle Slope	6	46.4	+ 5.1	+22.9	+ 2.1
Southern Slope	6	52.8	+ 4.0	+15.8	+ 1.4
Southern Plateau	15	49.9	+ 4.3	+ 8.1	+ 0.7
Middle Plateau	9	41.7	+ 4.8	+17.3	+ 1.6
Northern Plateau	10	41.8	+ 4.7	+19.3	+ 1.8
North Pacific	9	48.1	+ 3.0	— 0.8	— 0.1
Middle Pacific	5	55.6	+ 2.0	+ 0.9	+ 0.1
South Pacific	4	59.6	+ 2.1	+ 4.5	+ 0.4

In Canada Prof. R. F. Stupart says:

The temperature was from 1° to 4° below average over Ontario and in western Quebec, average or slightly below in the far northern portions of the Northwest Territories, and above average in all the remaining parts of Canada. In British Columbia the excess was as much as 8° in some localities. In Manitoba and over the southern parts of the Northwest Territories it was also considerable, amounting to from 3° to 6°; likewise in the Maritime Provinces it was from 1° to 4°.

PRECIPITATION.

The rainfall was very heavy on the north Pacific coast from northwestern Oregon to British Columbia. The amounts registered in this region varied from 10 to 20 inches. More than the normal rainfall was also recorded on the coast of central California and in the northern portion of the great valley in the same State; also in southeastern New Mexico and northwestern Texas, where an excess of about an inch was registered. Elsewhere precipitation was below the seasonal average by amounts ranging from a fraction of an inch to three inches or over in the lower Ohio Valley.

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	10	1.88	47	—2.1	— 3.3
Middle Atlantic	12	1.86	59	—1.3	— 3.9
South Atlantic	10	1.14	38	—1.9	— 2.7
Florida Peninsula	7	0.70	29	—1.7	+ 0.9
East Gulf	7	1.79	49	—1.9	— 3.1
West Gulf	7	1.92	49	—2.0	—10.5
Ohio Valley and Tennessee	12	1.25	34	—2.4	—11.1
Lower Lake	8	2.35	75	—0.8	— 3.3
Upper Lake	9	1.45	59	—1.0	— 6.2
North Dakota	8	0.24	32	—0.5	+ 1.1
Upper Mississippi Valley	11	0.98	45	—1.2	— 9.9
Missouri Valley	10	0.65	45	—0.8	— 5.3
Northern Slope	7	0.30	60	—0.2	+ 1.0
Middle Slope	6	0.50	62	—0.3	— 5.6
Southern Slope	6	1.89	136	+0.5	— 3.5
Southern Plateau	15	0.47	70	—0.2	+ 1.0
Middle Plateau	9	0.50	56	—0.4	— 0.1
Northern Plateau	10	1.37	82	—0.3	— 2.2
North Pacific	9	10.59	149	+3.5	+ 1.6
Middle Pacific	5	3.94	130	+0.9	+ 1.2
South Pacific	4	0.83	62	—0.5	+ 2.1

In Canada Professor Stupart says:

The precipitation, except in a few isolated localities, was below the average in all portions of Canada and in most districts to a considerable amount. The exceptions were: at Montreal and its immediate vicinity, half an inch above the average; the country to northeastward of Lake Superior, somewhat more than average precipitation; and the lower mainland of British Columbia, very much above the average. Westminster recorded 12 inches of rain during the month, and Agassiz almost 11 inches. The chief deficiencies were: in Manitoba from a half to one inch; in the Lake region from 1 to 2 inches; in Quebec from 1 to 2.25 inches, and in the Maritime Provinces from 1 to 3 inches. In the Province of Quebec the precipitation was largely snow. In many parts of Ontario and New Brunswick there was also a good deal of snow. At the close of the month there was from 4 to 10 inches of snow on the ground from Lake Superior to the Ottawa Valley, including the Nipissing and Muskoka districts; in Quebec from 10 to 15 inches and in a large portion of New Brunswick from 4 to 8 inches, but elsewhere in Canada little or none, and what is somewhat remarkable, scarcely any in Manitoba and the Territories.

The snowfall of the month was light except in northern New England and in the Adirondack region of eastern New York. On the Upper Peninsula of Michigan amounts ranging from 10 to 20 inches were recorded. At the end of the month there was no snow on the ground, except a very light cover over northeastern Wisconsin, the Upper Peninsula of Michigan, the northern portion of the lower peninsula, and over Pennsylvania, New York, and northern New England. There was a light covering of snow on the ground in Connecticut and Massachusetts and also in the mountain regions of West Virginia. There was some snow on the ground in the higher elevations of the Rocky Mountain districts.

HAIL.

The following are the dates on which hail fell in the respective States:

Arizona, 12. Arkansas, 22. Colorado, 11. Idaho, 4, 23. Illinois, 11. Indian Territory, 11, 28. Louisiana, 20, 22. Mississippi, 18, 19, 22. Missouri, 22. Nebraska, 3, 18. Nevada, 10, 11. New York, 18. Oregon, 1, 5, 20, 23. Pennsylvania, 12. South Dakota, 2. Texas, 11. Utah, 10, 11. Washington, 1, 5, 7, 15, 16, 20, 23. West Virginia, 4. Wyoming, 20.

SLEET.

The following are the dates on which sleet fell in the respective States:

Alabama, 18. Arizona, 12. California, 10, 15, 18, 29. Colorado, 10, 11, 29, 30. Connecticut, 11, 23, 24. Georgia, 5, 19. Idaho, 20, 22. Illinois, 3, 24. Indiana, 14, 15, 16, 25. Iowa, 2, 3, 24, 26. Kansas, 2, 3, 18. Maine, 12, 14, 24, 25. Maryland, 4, 18, 23, 25, 28, 29. Massachusetts, 11, 19, 23, 24, 25. Michigan, 11, 12, 14, 22, 23. Minnesota, 2, 3, 5, 6, 7, 23, 24, 30. Missouri, 2, 3, 18, 23. Montana, 5. Nebraska, 2, 3, 10. New Hampshire, 8, 12, 24, 25. New Jersey, 14. New Mexico, 12. New York, 5, 10, 11, 16, 19, 22, 23, 24, 25. North Carolina, 19, 23. North Dakota, 22, 23, 30. Ohio 3, 4, 15, 17, 18, 19, 24, 25, 28. South Dakota, 5, 6, 27. Tennessee, 19. Utah, 10, 21, 24, 29. Vermont, 10, 12, 13, 19, 24. Virginia, 23. Washington, 1, 11, 21, 22. West Virginia, 4, 23, 24, 29. Wisconsin, 2, 3, 11, 17, 24.

HUMIDITY.

The averages by districts appear in the subjoined table:

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	74	— 4	Missouri Valley	66	— 5
Middle Atlantic	70	— 6	Northern Slope	70	+ 4
South Atlantic	69	—10	Middle Slope	62	0
Florida Peninsula	76	— 5	Southern Slope	68	+ 7
East Gulf	68	— 9	Southern Plateau	50	+ 4
West Gulf	71	— 2	Middle Plateau	56	+ 2
Ohio Valley and Tennessee	71	— 2	Northern Plateau	70	— 3
Lower Lake	76	0	North Pacific Coast	86	— 1
Upper Lake	79	— 1	Middle Pacific Coast	81	+ 8
North Dakota	82	+ 3	South Pacific Coast	78	+11
Upper Mississippi	70	— 4			

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table IV, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 353 thunderstorms were received during the current month as against 976 in 1900 and 1,218 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 11th, 74; 2d, 50; 22d, 45.

Reports were most numerous from: Arkansas, 39; Mississippi, 25; Texas, 24.

The number of thunderstorms thus far reported during 1901 is somewhat less than were recorded during the corresponding period of 1900. During the months of June and July, however, the number of thunderstorms in 1901 exceeded by over 2,000 the number reported in 1900. With the exception of these two month, the remainder of the current year has been less productive of thunderstorms than was 1900.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz: 21st to 29th.

In Canada: Thunderstorms were reported as follows: St. Johns, 7, 15; New Westminster, 21.

Auroras were reported as follows: Quebec, 3; Battleford, 5, 12.

SUNSHINE AND CLOUDINESS.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

The averages for the various districts, with departures from the normal, are shown in the table below:

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	6.6	+1.0	Missouri Valley	4.1	−0.8
Middle Atlantic	5.5	+0.3	Northern Slope	4.6	0.0
South Atlantic	3.3	−1.2	Middle Slope	4.0	+0.4
Florida Peninsula	3.4	−1.2	Southern Slope	4.1	+0.9
East Gulf	3.6	−0.9	Southern Plateau	3.0	+0.7
West Gulf	4.4	−0.2	Middle Plateau	4.6	+1.0
Ohio Valley and Tennessee	4.7	−1.0	Northern Plateau	6.6	+0.6
Lower Lake	7.4	+0.2	North Pacific Coast	8.1	+1.3
Upper Lake	7.6	+0.6	Middle Pacific Coast	6.0	+2.2
North Dakota	4.3	−1.0	South Pacific Coast	3.8	+0.9
Upper Mississippi	4.0	−1.3			

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Block Island, R. I.	10	71	nw.	El Paso, Tex.	12	51	ne.
Do.	13	56	w.	Hatteras, N. C.	6	51	n.
Do.	24	81	ne.	Mount Tamalpais, Cal.	28	56	s.
Do.	26	54	nw.	Nantucket, Mass.	24	68	e.
Boston, Mass.	24	60	ne.	New York, N. Y.	10	58	nw.
Cape Henry, Va.	28	53	n.	Do.	13	62	nw.
Chicago, Ill.	6	50	s.	Do.	14	50	w.
Cleveland, Ohio	12	50	w.	Do.	24	56	ne.
Do.	13	53	nw.	Do.	25	66	nw.
Do.	14	60	w.	Do.	26	72	nw.
Duluth, Minn.	14	56	nw.	Do.	27	53	nw.
Eastport, Me.	25	50	e.	Point Reyes Light, Cal.	10	50	nw.

DESCRIPTION OF TABLES AND CHARTS.

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For description of tables and charts see page 426 of REVIEW for September, 1901.